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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,630	02/11/2002	Douglas N. Kimelman	YOR920020023	4522

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EXAMINER
MITCHELL, JASON D

ART UNIT	PAPER NUMBER
2193	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/073,630	KIMELMAN ET AL.
	Examiner	Art Unit	
	Jason Mitchell	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-13* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1, and 3-13 are pending in this application.

Response to Arguments

2.   **Regarding the 35 USC 101 rejection of claims 5-8 and 13:**

3.   The applicant asserts, "The Office Action improperly reads into section 101 the

limitation that claims must be limited to tangible embodiments."

The Examiner asserts that claims which recite nothing but the physical

characteristics of a form of energy, such as a frequency, voltage, or the strength of a

magnetic field, define energy or magnetism, per se, and as such are nonstatutory

natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear

that a claim reciting a signal encoded with functional descriptive material falls within any

of the categories of patentable subject matter set forth in § 101. Accordingly the

rejection is maintained.

4.   **Regarding the 35 USC 101 rejection of claims 9-11:**

5.   The applicant's amendment of claim 9 to recite "A computer system" is

insufficient to overcome the corresponding 101 rejection. Specifically a system (as

discussed in the rejection below) can comprise nothing but software (e.g. a software

system). Accordingly the rejection is maintained.

6.   **Regarding the 35 USC 112 2nd rejection of claims 1, 5 and 9:**

7.   The applicant's amendment was sufficient to overcome the previous rejection,

which, is consequently withdrawn.

8.   **Regarding the Provisional Double patenting rejection:**

9.   The terminal disclaimers filed by applicant are sufficient to overcome the

previous rejection with is consequently withdrawn.

10.   **Regarding the 35 USC 103(a) rejection of claims 1, and 3-13:**

11.   The applicant asserts that "Dynamic Program Monitoring" fails to disclose

"instrumenting said components to gather cost-related information during at least a

partial run of said program" because the reference fails to "state the criteria used for

ordering of procedures. [And] To assume, as the Office Action does, that the ordering is

done in order of cost estimates is improper because it is an improper use of hindsight."

(see the last par. on pg. 9)

The examiner disagrees. "Dynamic Program Monitoring" discloses the

instrumentation "logs information about entry and exit to [each] procedure" (pg. 236, 1st

col. last partial par.) and analyzing this log information "to construct a dynamic call

graph of the program" (pg. 236, 2nd col. 3rd full par.) This disclosure anticipates the

claimed instrumenting said component to gather cost-related information ... comprising

a kind of use that is made of the ... component or corresponding decisions made for

other components that interact with said component". "Dynamic Program Monitoring"

further discloses "The goal of the reordering strategies is to improve locality of

reference" (pg. 237, 1st col. 1st full par.) In order to achieve this goal the reference

discloses "the weight of a node is calculated as a function of the number of times it is

called and the weights of its children" (pg. 237 2nd col. 1st full par.) This disclosure

anticipates the broadly claimed and disclosed estimating a cost. Accordingly it is the

examiner's position that no improper hindsight was used in the rejection.

12.   The application asserts "the cited combination does not teach or suggest ... that

cost-related information comprises the kind of use that is made of the component or

corresponding decisions made for other components that interact with the component"

(see the 1st par. on pg. 10)

        The examiner disagrees. First, as discussed above, "Dynamic Program

Monitoring" discloses gathering cost-related information including "a dynamic call

graph". Those of ordinary skill in the art will recognize this represents a "kind of use that

is made of a component" (i.e. which objects call a particular component and in what

circumstances). Further, "Program Specialization" also discloses the limitation by

determining the size of a file accessed by a component and the amount of data

retrieved during each access (e.g. pg. 10, 4th full par. "nature of the data being

accessed and properties of the application accessing them"). The asserted combination

does not remove either of these functionalities and thus teaches the claimed limitation.

13.   The applicant asserts "the Office Action contends that Dynamic Program

Monitoring gathers cost-related information and orders various implementation but does

not choose among the ordered procedures". The applicant further asserts that "Program Specialization does not teach, suggest or motivate the modification of Dynamic Program Monitoring as suggested by the Office Action".

The examiner disagrees. This assertion seems to indicate a misunderstanding of the rejection. Specifically applicant appears to believe the ordering disclosed in "Dynamic Program Monitoring" is used to determine the 'best' component to use. This is not the case "Dynamic Program Monitoring" discloses optimally reordering the components of a program in order to "improve the locality of reference" (pg. 237, col. 1, 1st full par.) based on gathered cost related data (e.g. pg. 236, 2nd col. 3rd full par. "a dynamic call graph of the program from the event log file"). "Program Specialization" discloses an additional optimization based on the selecting of one of a plurality of selectable implementation for a particular component (pg. 10, 3rd full par. "The various derived classes implement strategies appropriate to different performance tradeoffs."). Broadly, it is the combination of the cost gathering and analysis of "Dynamic Program Monitoring" and the selection of an implementation for a particular component taught in "Program Specialization" which is used to reject the claims. This combination is suggested in "Program Specialization" (see pg. 15, 1st par. "In prior work we demonstrated OMOS doing stat call graph analysis. This can be used to determine the call chain of particular service invocations, and allowing us to avoid the weakness of this current work").

Claim Rejections - 35 USC § 101

14.   **Claims 5-11 and 13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

15.   **Regarding Claims 5-8 and 13:** Claims 5-8 and 13 are not limited to statutory embodiments. In view of Applicant's disclosure, specification page 21, line 18-page 22, line 6, the claimed medium is not limited to statutory embodiments, instead being defined as including both statutory embodiments (e.g., "ROM, Flash memory, Disk drive memory, CD-ROM") and non-statutory embodiments (e.g., "computer readable information in a transitory state medium such as ...a wireless network"). As such, the claim is not limited to statutory subject matter and is therefore non-statutory.

16.   **Regarding Claim 9-11:** The claims recite "A computer system ... comprising: a) a plurality of ... implementations; b) a common interface and semantics ... c) an instrumentation ... d) a cost estimator ... and e) a selector" all of which describe software. Computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 112

17.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18.   Claim 1 recites the limitation "the candidate component" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

19.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20.   Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Dynamic Program Monitoring and Transformation Using the OMOS Object Server" by Orr et al ("Dynamic Program Monitoring") in view of Program Specialization Using the OMOS System" by Orr et al. ("Program Specialization").

21.   **Regarding Claims 1, 5 and 9:** "Dynamic Program Monitoring" discloses a method comprising steps of:

instrumenting said component to gather cost-related information during at least a partial run of said computer program (pg. 235, col. 2, last full par. "the resulting object includes interposed monitor procedures [to] send an event trace back to OMOS");

using the cost-related information to estimate a cost of running the program (pg. 235, col. 2, last full par. "analyzes this information to derive a desired ordering of

procedures within the executable"; cost estimation is necessary to determine an optimal

ordering) the cost-related information comprising a kind of use that is made of the

candidate component or corresponding decisions made for other components that

interact with said component (pg. 236, col. 2, last full par. "The dynamic call graph

constructed by the analysis program has ... an arc from the caller to the callee."; par.

bridging pp. 236-237 "The ordering represents the order in which the procedures should

be placed in physical memory to improve inter-procedure locality of reference"); and

based on the estimate of cost, at runtime, generating an implementation for a

subsequent at least partial run of the program (pg. 235, col. 2, last full par. "analyzes

this information to derive a desired ordering of procedures within the executable"; par.

bridging pp. 236-237 "The ordering represents the order in which the procedures should

be placed in physical memory to improve inter-procedure locality of reference").

22.   "Dynamic Program Monitoring" does not disclose selecting, at runtime, one of a

plurality of explicitly selectable implementations.

23.   "Program Specialization" using cost related information (pg. 10, 4th full par.

"nature of the data being accessed and properties of the application accessing them"),

selecting at runtime, one of a plurality of the selectable implementations (pg. 10, 3rd full

par. "The various derived classes implement strategies appropriate to different

performance tradeoffs.") for a subsequent at least partial run of the computer program,

the one of the plurality of explicitly selectable implementation selected being an

implementation with the lowest cost (pg. 11, 1st full par. "which I/O object type to return").

24.   It would have been obvious to one of ordinary skill in the art at the time of the invention to select, at runtime, one of the plurality of explicitly selectable implementations taught in "Program Specialization" (pg. 10, Section 6.3) based on the instrumentation disclosed in "Dynamic Program Monitoring" (pg. 235, Section 4) in order to "avoid the weakness of this current work that all I/O through a particular interface is treated identically" ("Program Specialization" pg. 15, 1st par.)

25.   **Regarding Claims 6 and 10:** The rejection of claims 5 and 9 are incorporated; further "Dynamic Program Monitoring" discloses a default implementation is used during the at least partial run (pg. 236, col. 1, 1st partial par. "the original blueprint").

26.   **Regarding Claims 3 and 7:** The rejection of claim 1 and 5 are incorporated; further "Program Specialization" teaches the selecting step is carried out by another component operable as a controller (pg. 5, par. 8 "OMOS evaluates the module specification, producing an implementation").

27.   **Regarding Claims 4 and 8:** The rejection of claims 1 and 5 are incorporated; further "Dynamic Program Monitoring" discloses the selecting step is carried out by an

application program (pg. 236, col. 2, 3rd full par. "OMOS runs an external analysis program").

28.　　**Regarding Claims 12 and 13:** The rejection of claims 1 and 5 are incorporated; further "Program Specialization" discloses providing the component with the plurality of explicit selectable implementations which share a common component interface and semantics (pg. 8, par. 2 "a given interface can face a range of operation conditions, each of which requires a different implementation").

Regarding Claim 11: see the rejection of claim 9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Mitchell whose telephone number is (571) 272-3728. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Mitchell/
Jason Mitchell
8/22/07

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